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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,744	08/30/2001	Charles A. Howland	W0490/7028 RJP	8554
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MAINE & ASMUS 100 MAIN STREET P O BOX 3445 NASHUA, NH 03061-3445			PIERCE, JEREMY R	
			ART UNIT	PAPER NUMBER
			1771	

DATE MAILED: 04/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/943,744

Applicant(s)

HOWLAND, CHARLES A.

Examiner

Jeremy R. Pierce

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 138-141, 143, 145-198 and 202-204 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 138-141, 143, 145-198 and 202-204 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment filed on February 2, 2004 has been entered. Claims 138, 141, 169, 170, 172, and 173 have been amended. Claims 142 and 144 have been cancelled. New claims 202-204 have been added. Claims 138-141, 143, 145-198, and 202-204 are currently pending. The amendment is sufficient to withdraw the 35 USC 103 rejections set forth in sections 5, 6, and 8-10 of the last Office Action because the new recitation that the yarn is "other than a corespun yarn" renders the claims non-obvious over the Land (U.S. Patent No. 6,146,759) and Montgomery et al. (U.S. Patent No. 5,033,262) references since both references disclose using corespun yarns. The amendment is also sufficient to withdraw the 35 USC 103 rejections set forth in sections 4 and 7 of the last Office Action because claims 138 and 169 now recite that all of the fibers in the yarn are substantially normal to the cross-section, rather than just at least one fiber of a first type and at least one fiber of a different type being substantially normal to the cross-section. And claim 170 now recites fiber bundle is formed of fibers oriented substantially normal to the cross-section rather than a plurality of fibers being oriented substantially normal to the cross-section.

### ***Priority***

2. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

### ***Claim Objections***

3. Claims 202 and 203 depend from claim 1. However, there is no pending claim 1 in the application. The Examiner will assume that the claims should depend from claim 138.

4. Claim 204 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 204 is dependent upon claim 203, but recites the same limitation that the yarn is not more than 300 denier.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 138-141, 143, 145-198, and 202-204 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claims 138 and 169 recite the yarn is "other than a corespun yarn."  
Independent claim 170 recites the fiber bundles is "other than a corespun fiber bundle."  
There is no support in the specification for precluding corespun yarn or fiber. Negative

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limitations are not allowed in the claims unless expressly set forth in the specification.

*Ex parte Grasselli*, 231 USPQ 393.

Claims 203 and 204 recite the yarn is "not more than 300 denier." Support for this is also not found in the specification.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 170-184, 187, 188, and 195-198 are rejected under 35 U.S.C. 102(b) as being anticipated by Bak et al. (U.S. Patent No. 5,792,555).

Bak et al. disclose a hybrid yarn that consists of two or more filaments (column 3, lines 23-26). The filaments are substantially normal to the cross-section of the bundle because they are interlaced with one another into an intimate mixture (column 3, lines 42-46). The bundle is not corespun. One of the filaments is high modulus filament that has a very high breaking strength (column 4, lines 42-47), and list several materials with breaking strengths greater than 10 g/denier (column 4, lines 50-64). Bak et al. also disclose the linear density of the yarn may be 100 dtex (column 3, line 64). With regard to claim 171, Bak et al. list aramid fibers, liquid crystal polyester fibers, and PBO fibers (column 4, lines 50-64). With regard to claim 172, Bak et al. disclose the high modulus filaments may be of one or more varieties (column 3, line 25). With regard to claims

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173 and 175, the second group of filaments comprises low breaking strength materials (column 5, lines 13-39). With regard to claim 174, Bak et al. list various polyolefins, polyamides, and polyester (column 5, lines 13-39). With regard to claim 176, the weight per unit length of the high modulus fiber is more than the second fiber (Example 2).

With regard to claims 177-181, Bak et al. disclose the high modulus fiber has filament densities as low as 0.1 dtex (column 4, line 22). With regard to claims 182-184, the second fibers have filament densities as low as 0.5 dtex (column 5, lines 10-11). With regard to claim 187, the high modulus filaments may comprise up to 90% of the yarn (column 3, line 66). With regard to claim 188, yarns with a linear density of 100 dtex are about 89 denier. With regard to claims 195-198, the yarn is woven into a fabric (column 3, line 16).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 138-141, 143, 147-180, 182, 187-198, and 202-204 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandor et al. (U.S. Patent No. 5,597,649) in view of Howland (U.S. Patent No. 5,837,623).

First with regard to claim 170, Sandor et al. disclose a cut resistant yarn made by combining two different types of fiber (Abstract). One of the fibers has a tensile strength

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of greater than 10 g/denier (column 2, line 15). The filaments may be intermingled by standard methods, such as an air jet (column 4, lines 51-56), so the fibers would be oriented substantially normal to the cross-section. The yarn is not corespun. Sandor et al. do not disclose a denier size for the fibers. Howland discloses protective clothing that has high penetration resistance to ice picks and the like (Abstract). Howland discloses using a high weave density to obtain this high penetration resistance, and the yarns used have a denier between 55 and 1500 (column 7, line 41). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use yarns having a denier of 100 in the protective clothing of Sandor et al. in order to be able to weave the fabric with a density that allows the fabric to be more penetration resistant, as taught by Howland. With regard to claim 171, Sandor et al. disclose aramid and liquid crystal polyester fibers (column 2, lines 18-49). With regard to claim 172, although Sandor et al. do not teaching using a combination of the high strength fibers, addition of a different type of high strength fiber to compliment the other high strength fiber would be obvious to a person skilled in the art in order to diversify the yarn's properties. With regard to claims 173 and 175, the second fiber has a low tensile strength (column 3, lines 1-16). With regard to claim 174, Sandor et al. disclose using polyamide, polyester, and polyolefin (column 3, lines 1-16). With regard to claim 176, Sandor et al. teach the second fiber may be as small as 1 dpf (column 4, line 45), and the high strength fibers may be as large as 15 dpf (column 4, line 49). With regard to claims 177-180 and 182, Sandor et al. disclose the fibers may all be as small as 1 dpf. With regard to claims 181 and 183-186, although Sandor et al. do not disclose lowering

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the dpf below 1, using smaller filaments in the yarn would be an obvious modification to a person skilled in the art in order to create a more flexible multi-filament yarn. With regard to claim 187, Sandor et al. disclose there should be at least 5% by weight of each type of fiber (column 5, lines 11-12). With regard to claims 188-190, Howland teach using a yarn denier as low as 55 (column 7, line 41). With regard to claim 191-193, Sandor et al. teach using spun staple fibers (column 2, lines 4-8), but Sandor et al. do not teach the cotton or worsted system of spinning. Howland also discloses that spun staple yarns are useful for manufacturing protective clothing. Howland teaches using either the cotton or wool system of spinning with staple fibers that are 1.5 inches in length is useful in creating a tightly woven substrate (column 7, lines 43-61). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use staple fiber yarn in the fabric of Sandor et al. in order to save on the cost of creating the yarn, as taught by Howland. With regard to claim 194, Howland teaches twisting the staple fibers together to form a yarn. It would have been obvious to a person having ordinary skill in the art at the time of the invention to twist with a multiplier of at least 2.7 in order to create a yarn that is sufficiently held together to be useful in the protective clothing. With regard to claims 195-198, the yarn is used to create a woven fabric (column 5, line 24).

Next with regard to claims 138 and 169, Sandor et al. disclose weaving the fibers into a fabric (column 5, line 24). However, Sandor et al. do not disclose the claimed round packed cover factor for the warp and fill yarns. Howland discloses that improved penetration resistance is attained by weaving high modulus multi-filament yarns with a



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cover in excess of 100% at the center of the fill yarn and in excess of 75% between two warp ends (column 2, lines 5-20). Howland does not disclose a "round packed cover factor" of 75% on the fill yarn and 26% on the warp yarn. However, "round packed cover factor" is only an alternative method for expressing the cover of a fabric. Since Howland already disclose densely woven fabrics, with a cover factor of up to 140% (column 4, line 59), the Examiner will assume that this cover value is in line with the "round packed cover factor" that the Applicant now claims. If not, it would have been obvious to a person having ordinary skill in the art to provide a fabric with the "round packed cover factor" that is claimed in claims 138-140, since doing so would be a matter of increasing the density of the weave, a result effective variable, to provide a fabric with improved penetration resistance. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It would have been obvious to one having ordinary skill in the art to weave the fabric of Sandor et al. with a fill yarn round packed cover factor of at least about 75%, or about 88%, and a warp yarn round packed cover factor of at least about 26%, or about 76%, in order to increase penetration resistance, as taught by Howland. With regard to claim 141, Sandor et al. disclose the cut resistant yarn is made by combining two different types of fiber (Abstract). With regard to claim 143, the yarn of Sandor et al. comprises many fibers that could be divided into bundles. With regard to claim 152, the yarn of Sandor et al. may be classified as a fiber bundle itself. With regard to claims 147, 148, and 153, Sandor et al. disclose using aramid fibers and liquid crystal polyester (column 2, lines

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18-49). With regard to claims 149 and 163, although Sandor et al. do not teaching using a combination of the high strength fibers, addition of a different type of high strength fiber to compliment the other high strength fiber would be obvious to a person skilled in the art in order to diversify the yarn's properties. With regard to claims 150, 151, and 154, Sandor et al. disclose using polyamide, polyester, and polyolefin (column 3, lines 1-16). With regard to claims 155-161, Sandor et al. disclose there should be at least 5% by weight of each type of fiber (column 5, lines 11-12). With regard to claim 162, Sandor et al. teach the second fiber may be as small as 1 dpf (column 4, line 45), and the high strength fibers may be as large as 15 dpf (column 4, line 49). With regard to claim 164, one could define a fiber bundle to be within the yarn of Sandor et al. that would comprise 60 to about 100 fibers. With regard to claim 165, Sandor et al. teach using spun staple fibers (column 2, lines 4-8), but Sandor et al. do not teach the denier of the yarn. Howland also discloses that spun staple yarns are useful for manufacturing protective clothing. Howland teaches yarn denier of between 50 and 100 (column 8, line 10) to create a densely woven substrate (column 7, lines 43-61). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use staple fiber yarn in the fabric of Sandor et al. in order to save on the cost of creating the yarn, as taught by Howland (column 7, lines 52-54). With regard to claim 166, Howland teaches twisting the staple fibers together to form a yarn (column 7, lines 43-61). It would have been obvious to a person having ordinary skill in the art at the time of the invention to twist with a multiplier of at least 2.7 in order to create a yarn that is sufficiently held together to be useful in the protective clothing. With regard to claim

202, Sandor et al. disclose the fabric to weigh as low as 12 osy (Table 1), but fail to disclose a fabric weight of not more than 10 osy. However, a person skilled in the art would know to lower the basis weight to make a lighter fabric and lighter protective clothing article. This would offer greater comfort to the wearer at the sacrifice of losing some of the fabric's ability to resist cuts and punctures. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use a fabric weight of not more than 10 osy in the fabric of Sandor et al. in order to create a lighter weight garment for the wearer. With regard to claims 203 and 204, Howland teaches using yarn with a denier below 300 (column 8, line 10).

11. Claims 143, 145, and 146 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandor et al. in view of Howland as applied to claim 138 above, and further in view of Zhu et al. (U.S. Patent No. 6,534,175).

Neither Sandor et al. nor Howland disclosing plying the yarns together. Zhu et al. is also directed to protective fabrics (Abstract). Zhu et al. also use a combination of high strength fibers and low strength fibers in making yarn that is weaved into fabric (column 2, lines 16-56). Zhu et al. teach plying yarns between 2 and 6 yarns together to form a bundled yarn for weaving (column 2, lines 1-4). It would have been obvious to a person having ordinary skill in the art at the time of the invention to ply two yarns of Sander et al. together in order to increase the strength of the yarn, as taught by Zhu et al. With regard to twisting, the amount of twist is a result effective variable that increases the yarn's durability. It would have been obvious to a person having ordinary

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skill in the art at the time of the invention to supply at least about  $\frac{1}{4}$  or  $\frac{1}{2}$  primary twist in order to form a plied yarn with sufficient durability.

### ***Double Patenting***

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 138-141, 143-149, 152, 153, and 163-169 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 5,976,996 to Howland. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '996 patent teach weaving a multi-filament yarn that comprises at least one fiber type (which would include 2) into a weave density to make a protective fabric.

14. Claims 138-141, 143-149, 152, 153, and 163-169 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 6,548,430 to Howland. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of

the '430 patent teach weaving a multi-filament yarn that comprises at least one fiber type (which would include 2) into a weave density to make a protective fabric.

15. Claims 138-141, 143, 145-198, and 202-204 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-51 of U.S. Patent No. 6,668,868 to Howland et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '868 patent teach a high-density weave with fibers comprising a blend of high strength fibers and low strength fibers.

16. Claims 138-141, 143-149, 152, 153, and 163-169 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 6,693,052 to Howland. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '052 patent teach weaving a multi-filament yarn that comprises at least one fiber type (which would include 2) into a weave density to make a protective fabric.

17. Claims 170-198 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8, 17-22, 28, 29, 35-38, and 74-80 of copending Application No. 09/943,749 to Howland. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '749 application teaches a non-corespun fiber bundle comprising high strength fiber and low strength fiber.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Response to Arguments***

18. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: U.S. Patent No. 4,800,113 to O'Connor and U.S. Patent No. 2,242,743 to Davis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy R. Pierce whose telephone number is (571) 272-1479. The examiner can normally be reached on Monday-Thursday 7-4:30 and alternate Fridays 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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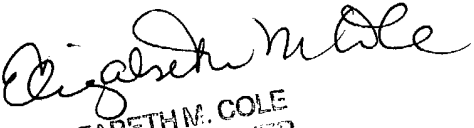
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JRP

JRP

  
ELIZABETH M. COLE  
PRIMARY EXAMINER